UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,627	07/10/2003	Clifton James Williamson	17539-032002/STL10773.1	4261

7590	02/15/2006

H. Sanders Gwin, Jr.
Shumaker &Sieffert, P.A.
8425 Seasons Parkway, Suite 105
St. Paul,, MN 55125

EXAMINER
LAMARRE, GUY J

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>*10 July 2003*</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-4 and 6-17* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-4, 6-17* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *10 July 2003* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some * c) ☐ None of:

         1. ☐ Certified copies of the priority documents have been received.

         2. ☐ Certified copies of the priority documents have been received in Application No. _____.

         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/10/03*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

*   The Examiner has considered the Applicant's IDS of *10 July 2003*.

*   Pursuant to 35 USC 131, **Claims 1-4, 6-17 are** presented for examination.

Claim Objections

1.   **Claim 5** is missing.

Appropriate correction is required.

Double Patenting (non-statutory)

2.   The non-statutory double patenting rejection, whether of the obviousness-type or non-obviousness-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); In re Vogel, 422 F.2d 438,164 USPQ 619 (CCPA 1970); In re Van Omum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985) and In re Goodman, 29 USPQ2d 2010 (Fed. Cir. 1993).

> A timely filed terminal disclaimer in compliance with 3 7 CFR 1. 3 2 1 (b) and may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78(d).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2.1   Instant claimed invention is not patentably distinct from US Patent Application No. 10/390996 although the conflicting claims are not identical.

2.1.1   **For example: Claim(s) 1** of US Patent Application No. 10/390996   contain(s) every element of **claim(s) 1** of the instant application and as such anticipate(s) **claim(s) 1** of the instant application.

2.1.2 "A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or **anticipated by**, the earlier claim. In re Longi, 759 F.2d at 896, 225 USPQ at 651 (affirming a holding of obviousness-type double patenting because the claims at issue were obvious over claims in four prior art patents); In re Berg, 140 F.3d at 1437, 46 USPQ2d at 1233 (Fed. Cir. 1998) (affirming a holding of obviousness-type double patenting where a patent application claim to a genus is anticipated by a patent claim to a species within that genus). " ELI LILLY AND COMPANY v BARR LABORATORIES, INC., United States Court of Appeals for the Federal Circuit, ON PETITION FOR REHEARING EN BANC (DECIDED: May 30, 2001).

2.2 This is a provisional obviousness-type double patenting.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.1   Claims 1-2, 4, 6-9, 11-17 are rejected under 35 U.S.C. 102(b) as being anticipated by **Applicants' Admitted prior art** (hereinafter **Admitted prior art**).

As per Claims 1-2, 4, 6-9, 11-17, Admitted prior art discloses, on page 4, an equivalent data corrector wherein, e.g., ultimate EDC syndromes are computed and compared to previously computed syndromes to detect error in data transferred through a medium via e.g., Reed Solomon coding structure comprising appropriate hardware for implementation therefor, such appropriate hardware comprising logic for hardware implementations of Horner's algorithm, a key equation solver, a Chien search, and Forney's algorithm along with required timing for data processing synchronization. ECC requires more bit overhead to effect data correction as opposed to EDC that may be implemented by addition of one parity bit: as such ECC is longer than EDC. **(Claims 16-17).**

As per Claim 1, **Admitted prior art** discloses, on page 4, an equivalent method of detecting errors in transferred data comprising steps of: receiving transferred data having an error detection code with a first symbol size and an error correction code having a second symbol size different from the first symbol size appended to user data; calculating a transformed error detection code syndrome; calculating a recomputed error detection code syndrome; comparing the recomputed transformed error detection code syndrome to the transformed error detection code syndrome; and if the recomputed transformed error detection code syndrome corresponds to the transformed error detection code syndrome, transferring the data to a host.

As per Claim 2, **Admitted prior art** discloses, on page 4, an equivalent method of claim 1 further comprising steps of: if the recomputed transformed error detection code syndrome does not correspond to the transformed error detection code syndrome, receiving the data again.

As per Claim 4, **Admitted prior art** discloses, on page 4, an equivalent method of claim 1, wherein the transformed error detection code syndrome calculating step comprises steps of: generating an error detection code multiplier; generating a non-transformed error detection code syndrome; and multiplying the error detection code multiplier by the non-transformned error detection code syndrome.

As per Claim 6, **Admitted prior art** discloses, on page 4, an equivalent method of claim 1 wherein the step of calculating a recomputed transformed error detection code syndrome is performed only if the transformed EDC syndrome is nonzero.

As per Claim 7, **Admitted prior art** discloses, on page 4, an equivalent method of claim 6 wherein if the transformed EDC syndrome is zero, then the transmitted data is transmitted to the host.

As per Claim 8, **Admitted prior art** discloses, on page 4, an equivalent method of detecting an error in error correction code (ECC) interleave encoded data comprising steps of: receiving ECC interleave encoded data; transforming the data in a transformed error detection code (EDC) syndrome

generator into a transformed error detection code syndrome; receiving the ECC interleave encoded data in a recomputed transformed error detection syndrome generator; generating a recomputed transformed error detection syndrome associated with a computed correction pattern in the ECC interleave encoded data; and comparing the transformed EDC syndrome with the recomputed transformed error detection syndrome.

As per Claim 9, **Admitted prior art** discloses, on page 4, an equivalent method of claim 8 further comprising a step of: locating errors either in the received data using an error locator; and correcting errors in the received data using an error evaluator.

As per Claim 11, **Admitted prior art** discloses, on page 4, an equivalent method of claim 8, wherein the transforming step comprises: generating a non-transformed EDC syndrome; computing an EDC multiplier; and multiplying the non-transformed EDC syndrome by the EDC multiplier to generate the transformed EDC syndrome.

As per Claim 12, **Admitted prior art** discloses, on page 4, an equivalent method of claim 11, wherein the step of generating a non-transformed EDC syndrome generator comprises: receiving the data; providing clocked flip-flops; multiplying an output of the flip-flops with a value associated with the error detection code in the received data; and logically adding the multiplied output to the received data.

As per Claim 13, **Admitted prior art** discloses, on page 4, an equivalent method of claim 8 further comprising steps of: generating an error correction code (ECC) syndrome from the received data in an ECC syndrome generator.

As per Claim 14, **Admitted prior art** discloses, on page 4, an equivalent method of claim 13 wherein the ECC syndrome generator is connected to a comparator through an error correction unit.

As per Claim 15, **Admitted prior art** discloses, on page 4, an equivalent method of claim 14 wherein the error correction unit is connected to the comparator through an EDC syndrome recomparator.

As per Claim 16, **Admitted prior art** discloses, e.g., on page 2 line 15 et seq., an equivalent method for encoding data with an error correction code and error detection code comprising: generating an error correction code for data using a first symbol size; and generating an error detection code for the data using a second symbol size different from the first symbol size.

As per Claim 17, **Admitted prior art** discloses, e.g., on page 2 line 15 et seq., an equivalent data method according to claim 16 wherein the first symbol size is h-bits and the second symbol size (g-bits) is twice the first symbol size.

Claim Rejections - 35 USC ' 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.0   This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4.1   Claims 3, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants'** **Admitted prior art** and WILLIAMSON (US Patent No. 5,905,740; May 18, 1999).

As per Claims 3, 10, Admitted prior art substantially discloses the claimed data corrector. {See **Admitted prior art,** page 1 line 12 – page 4, in passim, wherein data corrector and method therefor are described.}

Not specifically described in detail in **Admitted prior art** is the approach of specifically incorporating Chien engine/Forney/Horner algorithm hardware implementations into the data corrector.

However WILLIAMSON, in an analogous art, discloses an error detecting coder wherein such techniques are described {See WILLIAMSON, Id., e.g., Figs. 1 and 3 wherein *syndrome generator (102& 132)* generates syndromes for received *polynomial 118* via data processing algorithms/techniques not exclusively limited to Horner's algorithm and wherein *error value generator (110 & 137)* uses the Forney algorithm as depicted in Figs. 1 (Forney at *Block 110*, Chien at *Block 108*) and 3.}

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure in the **Admitted prior art** by including therein an error detecting coder as taught by WILLIAMSON, because such modification would provide the procedure disclosed in **Admitted prior art** with a technique wherein "added flexibility is gained in data transfer." {See WILLIAMSON, Fig. 3.}

4.2   Claims 3, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants' Admitted prior art** and REED ET AL. (US Patent No. 5,771,244; June 23, 1998).

As per Claims 3, 10, **Admitted prior art** substantially discloses the claimed data corrector. {See **Admitted prior art,** page 1 line 12 – page 4, in passim, wherein data corrector and method therefor are described.}

Not specifically described in detail in **Admitted prior art** is the approach of specifically incorporating Chien engine/Forney/Horner algorithm hardware implementations into the data corrector.

However REED ET AL., in an analogous art, discloses an error detecting coder wherein such techniques are described {See REED ET AL., Id., e.g., col. 10 lines 37 et seq. wherein *syndrome generator* generates syndromes for received *polynomial* via data processing algorithms/techniques not exclusively limited to Horner's algorithm and wherein *error value generator* uses the Forney algorithm.
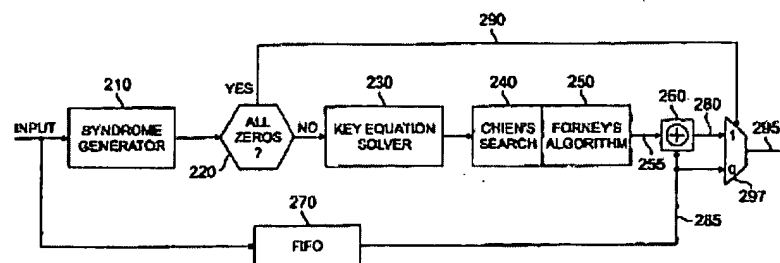
Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure in the **Admitted prior art** by including therein an error detecting coder as taught by REED ET AL., because such modification would provide the procedure disclosed in **Admitted prior art** with a technique wherein "computation of each syndrome can be effected in parallel to expedite data processing." {See REED ET AL., col. 28 line 25 et seq.}

4.3   Claims 3, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicants'**
Admitted prior art and DOHMEN ET AL. (US Patent No. 6990624; filed Oct. 12, 2001).

As per Claims 3, 10, Admitted prior art substantially discloses the claimed data corrector. {See **Admitted prior art,** page 1 line 12 – page 4, in passim, wherein data corrector and method therefor are described.}

Not specifically described in detail in **Admitted prior art** is the approach of specifically incorporating Chien engine/Forney/Horner algorithm hardware implementations into the data corrector.

However DOHMEN ET AL., in an analogous art, discloses an error detecting coder wherein such techniques are described {See **DOHMEN ET AL.,** Id., e.g., Figs. 2, 8, 10 wherein *syndrome generator 800* generates syndromes for received *polynomial*

FIG. 2
(PRIOR ART)

via data processing algorithms/techniques not exclusively limited to Horner's (e.g., '*The syndrome generator 800 performs a syndrome calculation based on Horner's rule.*') algorithm and wherein *error value generator* uses the Forney algorithm.}

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the procedure in the **Admitted prior art** by including therein an error detecting coder as taught by DOHMEN ET AL., because such modification would provide the procedure disclosed in **Admitted prior art** with a technique wherein "computation of each syndrome can be effected in parallel to expedite data processing." {See DOHMEN ET AL., e.g., Fig. 8.}

Conclusion

*   Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

or faxed to: (571) 273-8300 for all formal communications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (571) 272-3826. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.
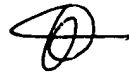
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert De Cady, can be reached at (571) 272-3819.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3609.

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Guy J. Lamarre, P.E
Primary Examiner
2/6/2006